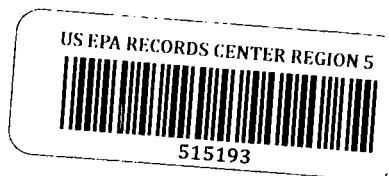


MINNESOTA POLLUTION CONTROL AGENCY  
December 15, 1978



~~SECRET~~

Briefing Memorandum Regarding  
Reilly Tar and Chemical Company  
in St. Louis Park

I. Background.

For over ~~50 years~~ ~~Reilly Tar and Chemical Company~~ operated a coal tar distillation and wood treating operation in St. Louis Park, Minnesota. ~~Plant discharges and runoff flowed to a low area where the water and accompanying coal tar wastes~~ seeped into the soils and ground waters of the area. The geology of the site consists of approximately 70 to 90 feet of mixed sands, silts, peat and clay overlying a thick series of sandstones, limestones and shales. The bedrock aquifers are the principal source of municipal water for St. Louis Park and surrounding communities. Studies to date have identified the oily wastes themselves to a depth of approximately 60 feet. The upper-most bedrock aquifer contains greater than 1 milligram per liter (mg/l) phenols. ~~polynuclear aromatic hydrocarbons (PAH)~~ ~~have been found in well water in sufficient quantities to suspend us~~ ~~of four municipal wells~~ These wells are about 500 feet deep and up ~~to one and three quarters miles from the disposal site.~~

II. History of Action.

In 1970 the Minnesota Pollution Control Agency (MPCA) and the City of St. Louis Park filed suit against ~~Reilly Tar for air and water violations~~. In 1973 the City dismissed its action as part of a purchase agreement. In 1978 the MPCA amended its original complaint to better define the ground water issues. Over the past three years the State

Legislature has appropriated over \$400,000 to study the problem.

The City has also invested sizable sums in various ground water and soil investigations. A sophisticated ground water modeling effort, scheduled for completion in late 1980, is being conducted by the U.S. Geological Survey (USGS). In the next couple months the State will be defining what additional studies must be completed in order to adequately define the problem and the solutions. Attempts will be made to identify sources of funding for the studies. The cost of corrective measures will likely be in the range of \$10 million. Funding for these measures must also be found.

### III. Appropriate Future Action.

It appears that adequate information on the health effects of PAH exists. Studies are now underway to better define the ground water hydrology of the area. A great deal of additional data is required on the extent of soil contamination, treatment or contaminated ground water. This information must be gathered through site specific studies. The EPA could provide assistance in identifying funding sources and making the required applications. This subject has been briefly discussed with John McGuire, Regional Administrator.

Report 4: Groundwater and Soil Contamination from Creosote and Coal Tar Derivatives in St. Louis Park, Minnesota.

This incident involves 80 acres of land located in the City of St. Louis Park, Minnesota which had been the site of a coal tar distillation process and wood creosoting operation for approximately 50 years.<sup>1</sup> In 1969 a groundwater investigation conducted for the City revealed low levels of phenols (trace - 23 ppb) in the municipal water supply.<sup>2</sup> Phenols are detectable by odor and taste at concentrations ranging from 10-100 ppb.<sup>3</sup> In addition, trace amounts approaching 1 ppb can impart an objectionable taste to water following marginal chlorination.<sup>4</sup> The investigation report indicated that the creosoting operation was the source of the contamination. The report also indicated that in 1932 one municipal and several private wells located near the site were abandoned due to a tarry taste.<sup>5</sup>

Subsequent analysis by the Minnesota Department of Health and the Carnegie-Mellon Institute failed to indicate any significant concentrations of phenols in the water. However, the health department did conclude that:

...it seems obvious that the disposal of a substantial quantity of phenolic material on the surface of the ground in a general area where there are wells producing water for human consumption is not desirable and constitutes a serious hazard.<sup>6</sup>

In October, 1970 the Minnesota Pollution Control Agency and the city brought suit against the generators seeking temporary and permanent abatement of further pollution of the air and water of the state.<sup>7</sup> The defendant generators counter claimed and discovery and investigation continued until September, 1971 when the generators closed down their operations. In June, 1973 the city purchased the property from the generators. The city proposed a plan to clean up the area which included land farming and obtaining a NPDES permit. However, due to lack of an adequate definition of the problem and sufficient technical data to determine the type and concentration of contaminants present in the ground, the Minnesota Pollution Control Agency withheld its approval of the city's plan pending an environmental assessment of the problem.<sup>8</sup>

In November, 1975 an engineering company was retained by the Minnesota Pollution Control Agency to evaluate the impact of the former generators on the soil and groundwater at the site.<sup>9</sup> Fourteen soil borings (a total of 196 samples) were taken within the site and analyzed for phenolic and benzene extractable materials. Eleven of these were analyzed by thin layer chromatography to determine the presence of polynuclear organic materials and five of these were subjected to gas chromatography to measure the concentration of six polynuclear organics.<sup>10</sup> In addition, nine groundwater monitoring wells were drilled in glacial soils and shallow bedrock within the site area. Samples were obtained from these wells and from five other municipal and industrial bedrock wells also located within the site.<sup>11</sup>

Analysis of the soil samples indicated phenolic concentrations ranging from <0.2 - 220 mg/kg depending upon depth and the particular area within the site.<sup>12</sup> In sufficient concentrations, phenols are toxic and they are suspected of being carcinogenic. Three polynuclear organics were also present: phenanthrene (<0.2 - 0.36 mg/g), chrysene (<3.2 - 17.8 mg/g), and pyrene (<6.2 - 39.9 mg/g).<sup>13</sup> There is evidence that these substances are neoplastigenic. Four well samples indicated phenolic substances ranging from 0.043 - 3.0 mg/l (43 - 3,000 ppb).<sup>14</sup> As previously mentioned phenolics are detectable by odor and taste at concentrations ranging from 10 - 100 ppb. and as low as 1 ppb. in chlorinated water.

There is uncertainty as to the exact manner in which the St. Louis Park site became contaminated. Apparently, over the 50 years in which the wastes were generated, there were numerous spillages, burial of spilled materials and solid wastes, pipeline breaks, waste discharges and contaminated run-off to sloughs, leakages from run-off catchment sumps and basins and dripping from freshly treated wood and poles.<sup>15</sup> At the present time there is a great deal of uncertainty as to what can be done to remedy this situation, a situation which potentially has long range and quite costly effects. Barr Engineering is continuing its study of the problem and is expected to recommend corrective actions and future studies needed to find solutions.<sup>16</sup>

#### REFERENCES

1. MPCA File, Division of Water Quality, Memorandum on Groundwater Contamination, St. Louis Park, Minnesota, Nov. 19, 1974.
2. MPCA File, Chronology of Creosote incident, St. Louis Park, Hennepin County, Oct. 29, 1974, p. 1.
3. Standard Methods for the Examination of Water and Wastewater, 13th Edition, 1971.
4. Ibid.
5. Chronology of Creosote incident, op. cit.
6. MPCA File, Memorandum from R.F. Frazier, Chief, Analytical Services Section, Minnesota Dept. of Health, to J.P. Badalich, Executive Director, MPCA, April 20, 1970.
7. MPCA File, Memorandum on Groundwater Contamination, op. cit.
8. Ibid.
9. Soil and Groundwater Investigation, Coal Tar Distillation and Wood Preserving Site, St. Louis Park, Minnesota, Phase I Report, Barr Engineering Co., May, 1976, p. 4.
10. Ibid., p. 5.
11. Ibid.
12. Ibid., Figures 1-8 and Appendix B.

13. Ibid., Table 1.
14. Ibid., Table 3.
15. Observations by MPCA and City staff, engineers and numerous employees, John Aho, Division of Water Quality.
16. Soil and Groundwater Investigation, op. cit.